

WHAT IS CLAIMED IS:

- 1     1.     A device for emitting output light, said device comprising:  
2                 a light source that emits first light of a first peak wavelength in a  
3     481-520 nm range; and  
4                 a wavelength-shifting region optically coupled to said light source  
5     to receive said first light, said wavelength-shifting region including Group IIB  
6     element Selenide-based phosphor material having a property to convert some of  
7     said first light to second light of a second peak wavelength in a red wavelength  
8     range, said first light and said second light being components of said output light.
- 1     2.     The device of claim 1 wherein said Group IIB element Selenide-based  
2     phosphor material of said wavelength-shifting region includes Zinc Selenide.
- 1     3.     The device of claim 2 wherein said Group IIB element Selenide-based  
2     phosphor material of said wavelength-shifting region includes said Zinc Selenide  
3     activated by at least one element selected from a group consisting of Copper,  
4     Chlorine, Fluorine, Bromine and Silver.
- 1     4.     The device of claim 1 wherein said Group IIB element Selenide-based  
2     phosphor material of said wavelength-shifting region includes Cadmium Selenide.
- 1     5.     The device of claim 1 wherein said light source includes a light emitting  
2     diode die that can generate said first light of said first peak wavelength.
- 1     6.     The device of claim 1 wherein said wavelength-shifting region is a part of  
2     a lamp coupled to said light source.
- 1     7.     The device of claim 1 wherein said wavelength-shifting region is a lamp  
2     coupled to said light source.

- 1     8.     A device for emitting output light, said device comprising:  
2                     a semiconductor die that emits first light of a first peak wavelength  
3     in a 481-520 nm range; and  
4                     a phosphor-containing medium positioned to receive said first  
5     light, said phosphor-containing medium including Group IIB element Selenide-  
6     based phosphor material having a property to convert some of said first light to  
7     second light of a second peak wavelength in a red wavelength range, said first  
8     light and said second light being components of said output light.
- 1     9.     The device of claim 8 wherein said Group IIB element Selenide-based  
2     phosphor material of said phosphor-containing medium includes Zinc Selenide.
- 1     10.    The device of claim 9 wherein said Group IIB element Selenide-based  
2     phosphor material of said phosphor-containing medium includes said Zinc  
3     Selenide activated by at least one element selected from a group consisting of  
4     Copper, Chlorine, Fluorine, Bromine and Silver.
- 1     11.    The device of claim 8 wherein said Group IIB element Selenide-based  
2     phosphor material of said phosphor-containing medium includes Cadmium  
3     Selenide.
- 1     12.    The device of claim 8 wherein said semiconductor die is a light emitting  
2     diode die.
- 1     13.    The device of claim 8 wherein said phosphor-containing medium is a part  
2     of a lamp coupled to said light source.
- 1     14.    The device of claim 8 wherein said phosphor-containing medium is a lamp  
2     coupled to said light source.

1    15.    A method for emitting output light, said method comprising:  
2                    generating first light of a first peak wavelength in a 481-520 nm  
3    range;  
4                    receiving said first light, including converting some of said first  
5    light to second light of a second peak wavelength in a red wavelength range using  
6    Group IIB element Selenide-based phosphor material; and  
7                    emitting said first light and said second light as components of said  
8    output light.

1    16.    The method of claim 15 wherein said Group IIB element Selenide-based  
2    phosphor material includes Zinc Selenide.

1    17.    The method of claim 16 wherein said Group IIB element Selenide-based  
2    phosphor material includes said Zinc Selenide activated by at least one element  
3    selected from a group consisting of Copper, Chlorine, Fluorine, Bromine and  
4    Silver.

1    18.    The method of claim 15 wherein said Group IIB element Selenide-based  
2    phosphor material includes Cadmium Selenide.

1    19.    The method of claim 15 wherein said generating includes generating said  
2    first light of said first peak wavelength at a light emitting diode die.

1    20.    The method of claim 19 wherein said light emitting diode die is configured  
2    to generate said first light such that said first peak wavelength is within a blue-  
3    green region of the visible light spectrum.